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Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/W.No.11/NK/CSR-06/877m/CEMENT/2015-16 Date: 16.06.2015

TEST REPORT ON CEMENT

*** CUSTOMER**	:	**Asst. Executive Engineer**, Vidyaranyapura Sub Division, BBMP, Bangalore.
***AGENCY**	:	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
***NAME OF THE WORK**	:	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
***REFERENCE**	:	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
SAMPLE ID	:	Cement
SAMPLE RECEIVED ON	:	15.06.2015
PERIOD OF TESTING	:	15.06.2015 to 16.06.2015

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	28.50 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	185 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	480 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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AE-II

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

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Job No.: CTCE/BBMP/W.No.11/NK/CSR-06/877m/SAND-Gradation/2015-16 : 16.06.2015

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. N. Keerthi,**
#66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.

*** Name of Work** : Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16
Dated: 29.04.2015

Technical Reference : IS : 2386 Part 1 - 1963 RA-2007

Sample ID : Fine Aggregates

Sample Received on : 15.06.2015

Date of Testing : 16.06.2015

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	96.80	90-100	90-100	90-100	95-100
2.36	78.20	60-95	75-100	85-100	95-100
1.18	54.70	30-70	55-90	75-100	90-100
600 Micron	26.30	15-34	35-59	60-79	80-100
300 Micron	14.20	5-20	8-30	12-40	15-50
150 Micron	5.10	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

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Job No.: CTCE/BBMP/W.No.11/NK/WMM/Gradation/2015-16 : 16.06.2015

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **Mr. N. Keerthi,**
#66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.

Name of Work : Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015

Date of Testing : 16.06.2015

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	145	145	2.9	97.1	95-100
22.4	1655	1800	36.0	64.0	60-80
11.2	985	2785	55.7	44.3	40-60
4.75	655	3440	68.8	31.2	25-40
2.36	630	4070	81.4	18.6	15-30
0.600	475	4545	90.9	9.1	8-22
0.075	350	4895	97.9	2.1	0-8

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Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

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Job No.: CTCE/BBMP/W.No.11/NK/WMM/Gradation/2015-16 : 16.06.2015

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **Mr. N. Keerthi,**
#66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.

Name of Work : Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.

Reference : EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015

Date of Testing : 16.06.2015

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	190	190	3.8	96.2	95-100
22.4	1550	1740	34.8	65.2	60-80
11.2	785	2525	50.5	49.5	40-60
4.75	675	3200	64.0	36.0	25-40
2.36	620	3820	76.4	23.6	15-30
0.600	680	4500	90.0	10.0	8-22
0.075	315	4815	96.3	3.7	0-8

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

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Job No.: CTCE/BBMP/W.No.11/NK/WMM/Gradation/2015-16 : 16.06.2015

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **Mr. N. Keerthi,**
#66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.

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Reference : EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015

Date of Testing : 16.06.2015

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	175	175	3.5	96.5	95-100
22.4	1670	1845	36.9	63.1	60-80
11.2	785	2630	52.6	47.4	40-60
4.75	620	3250	65.0	35.0	25-40
2.36	635	3885	77.7	22.3	15-30
0.600	495	4380	87.6	12.4	8-22
0.075	365	4745	94.9	5.1	0-8

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Reference : EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015

Date of Testing : 16.06.2015

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	155	155	3.1	96.9	95-100
22.4	1595	1750	35.0	65.0	60-80
11.2	780	2530	50.6	49.4	40-60
4.75	645	3175	63.5	36.5	25-40
2.36	615	3790	75.8	24.2	15-30
0.600	655	4445	88.9	11.1	8-22
0.075	310	4755	95.1	4.9	0-8

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Reference : EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015

Date of Testing : 16.06.2015

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	195	195	3.9	96.1	95-100
22.4	1675	1870	37.4	62.6	60-80
11.2	835	2705	54.1	45.9	40-60
4.75	725	3430	68.6	31.4	25-40
2.36	655	4085	81.7	18.3	15-30
0.600	390	4475	89.5	10.5	8-22
0.075	345	4820	96.4	3.6	0-8

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Job No.: CTCE/BBMP/W.No.11/NK/WMM/AIV/2015-16 16.06.2015

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
Name of the Work	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	16.06.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	81	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	
4	Aggregate Impact value = percent fines	21.32	22.14	
	100* (W_2/W_1)%			**21.73**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.11/NK/WMM/AIV/2015-16 16.06.2015

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
Name of the Work	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	16.06.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	389	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines	22.08	22.88	
	100* (W_2/W_1)%			22.48

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.11/NK/WMM/S-T/2015-16 16.06.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
Name of Work	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	16.06.2015

Result : Flakiness Index = **11.82%**

Elongation Index = **13.54%**

Result : Combined Flakiness & Elongation index 25.36%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.11/NK/WMM/S-T/2015-16 16.06.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
Name of Work	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	16.06.2015

Result : Flakiness Index = **12.15%**

Elongation Index = **13.67%**

Result : Combined Flakiness & Elongation index 25.82%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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T-2377

Job No: CTCE/BBMP/W.No.11/NK/CSR-06/877m/SDBC(QB)/2015-16 27.06.2015

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

*CUSTOMER	:	**Asst. Executive Engineer**, Vidyaranyapura Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
*NAME OF THE WORK	:	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
REFERENCE	:	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
*SAMPLE ID	:	Bitumen
DATE OF SAMPLING	:	25.06.2015
PERIOD OF TESTING	:	27.06.2015

The results of the tests conducted on the bitumen sample using for Semi Dense Bituminous Concrete.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	86	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	47	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	290	Min. 220

*Information is furnished by the Customer/Representative.

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VIDYARANI P.K.
Technical Manager

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/AIV/2015-16 27.06.2015

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
Name of the Work	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	27.06.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	383	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.67	22.48	22.08

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Shape_T/2015-16 27.06.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
Name of Work	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	27.06.2015

Result : Flakiness Index = **11.39%**

Elongation Index = **13.84%**

Result : Combined Flakiness & Elongation index **25.23%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Stripping/2015-16 29.06.2015

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
Name of the work	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	29.06.2015

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.2	3.33	96.67
2	3.3		
3	3.5		

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Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Sp_Wa/2015-16 29.06.2015

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
Name of the Work	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	29.06.2015

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2014	2015	2016	
2	Weight of basket suspended in water	W_2 g	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1264	1265	1266	
4	Weight of saturated surface dry aggregate in air	W_3 g	2012	2014	2015	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	748	749	749	
6	Weight of oven dried aggregate	W_4 g	2001	2005	2002	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.675	2.677	2.673	2.675
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.715	2.709	2.720	2.715
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.55%	0.45%	0.65%	0.55%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Bitumen/2015-16 29.06.2015

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
NAME OF THE WORK	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
SAMPLE I/D	Roads at Singapoor Layout, Ward No. 11
DATE OF TESTING	29.06.2015

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	474.5	474.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25.5	25.50
7. Bitumen content in %	5.10	5.10
8. Average	**5.10**	

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Bitumen/2015-16 29.06.2015

GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS2386 and IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
NAME OF THE WORK	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
REFERENCE	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
SAMPLE I/D	Roads at Singapoor Layout, Ward No. 11
DATE OF TESTING	29.06.2015

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	32.2	6.79	6.79	93.21	90-100
4.75	265.65	55.99	62.77	37.23	35-51
2.36	45.5	9.59	72.36	27.64	24-39
1.18	36.45	7.68	80.04	19.96	15-30
0.3	30.25	6.38	86.42	13.58	9-19
0.075	35.35	7.45	93.87	6.13	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	38.65	8.15	8.15	91.85	90-100
4.75	262.58	55.34	63.48	36.52	35-51
2.36	42.63	8.98	72.47	27.53	24-39
1.18	36.54	7.70	80.17	19.83	15-30
0.3	32.32	6.81	86.98	13.02	9-19
0.075	32.48	6.85	93.83	6.17	3-8

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/AGG/2015-16 29.06.2015

Aggregate Gradation Test

IS : 2386 Part I

Customer	**Asst. Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
Name of the Work	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	29.06.2015

Total Weight of Sample: **5400** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	418	7.7	7.74	92.26	90-100	
4.75	2658	49.2	56.96	43.04	35-51	
2.36	792	14.7	71.63	28.37	24-39	
1.18	478	8.9	80.48	19.52	15-30	
0.3	335	6.2	86.69	13.31	9-19	
0.075	412	7.6	94.31	5.69	3-8	

Total Weight of Sample: **5500** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	341	6.2	6.20	93.80	90-100	
4.75	3115	56.6	62.84	37.16	35-51	
2.36	652	11.9	74.69	25.31	24-39	
1.18	475	8.6	83.33	16.67	15-30	
0.3	311	5.7	88.98	11.02	9-19	
0.075	354	6.4	95.42	4.58	3-8	

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Job No.: CTCE/BBMP/W.No.11/NK/SDBC/Stability/2015-16 29.06.2015

TEST REPORT ON STABILITY OF MIX

Customer	:	**Asst. Executive Engineer**, Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. N. Keerthi,** #66, Anandappa Building Hospital Road, Yelahanka, Bangalore – 64.
Name of the Work	:	Road development and asphalting works at Singapoor Layout Main Road in Ward No.11 (Kuvempunagara), Vidyaranyapura Sub Division, BBMP, Bangalore.
Reference	:	EE/BTP/BBMP/E-PMT/11(16942)/WO/62/2015-16 Dated: 29.04.2015
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Semi Dense Bituminous Concrete
Date of Testing	:	29.06.2015

The results of the tests conducted on the Semi Dense Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-16)
1	Marshal Stability, Kn	8.55	8.95	8.2 Kn (min)
2	Marshal flow, mm	2.90	3.25	2 – 4
3	Percent air voids in Mineral Aggregate	3.15	4.10	3 – 5
4	Voids in Compacted Mix	13.25	14.10	13 – 15
5	Percent Voids filled with Bitumen	67.15	68.50	65 - 78
6	Density, g/cc	2.26	2.27	--

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